

WE CLAIM:

1. A method of enabling distributed transaction oriented telephony functionality for telephony services deployed in a broadband packet network, the method comprising steps of:
  - a) at a first network element, encapsulating a functional content of a transaction message in a Protocol Data Unit (PDU) of the broadband packet network;
  - b) forwarding the PDU through the broadband packet network to a second network element; and
  - c) invoking the functionality using the encapsulated transaction message functional content.
2. A method as claimed in claim 1, wherein the distributed transaction oriented telephony functionality comprises intelligent network/advanced intelligent network (IN/AIN) functionality.
3. A method as claimed in claim 1, wherein the broadband packet network comprises any one or more of: an Asynchronous Transfer Mode (ATM) network; an internet Protocol (IP) network; a Frame Relay (FR) network; and an Integrated Services Digital Network (ISDN).
4. A method as claimed in claim 3, wherein the broadband packet network comprises an IP Network, and the PDU comprises a Session Initiation Protocol (SIP) message envelope.
5. A method as claimed in claim 1, wherein the first network element comprises a media gateway controller

adapted to enable telephony signal traffic through the broadband packet network.

6. A method as claimed in claim 1, wherein the second network element comprises an application server adapted to invoke the functionality using transaction message functional content.
7. A method as claimed in claim 6, wherein the application server comprises either one of:
  - a) a CCS network element adapted to send and receive PDU's of the broadband packet network; and
  - b) a network element of the broadband packet network.
8. A method as claimed in claim 1, wherein the step of encapsulating the functional content of the transaction message comprises the steps of:
  - a) formulating a transaction message; and
  - b) inserting the formulated transaction message into a payload portion of the PDU.
9. A method as claimed in claim 8, wherein the transaction message comprises either one of a Transaction Capabilities Application Part (TCAP) message and an Intelligent Network Application Part (INAP) message.
10. A method as claimed in claim 1, wherein the step of encapsulating the functional content of the transaction message comprises a step of mapping the transaction message onto the PDU.

11. A method as claimed in claim 10, wherein the transaction message comprises a Transaction Capabilities Application Part (TCAP) message.
12. A method as claimed in claim 11, wherein the step of mapping comprises a step of mapping a TCAP message type onto a respective message type of the PDU.
13. A method as claimed in claim 12, wherein the TCAP message type comprises any one or more of: query; response; conversation; unidirectional; and abort.
14. A method as claimed in claim 10, wherein the transaction message comprises an Intelligent Network-Application Part (INAP) message.
15. A method as claimed in claim 14, wherein the step of mapping comprises a step of mapping an INAP message type onto a respective message type of the PDU.
16. A method as claimed in claim 15, wherein the INAP message type comprises any one or more of: begin; end; continue; unidirectional; and abort.
17. A method as claimed in claim 10, wherein the step of mapping comprises a step of mapping a transaction message parameter onto a respective PDU message parameter.
18. A method as claimed in claim 17, wherein the transaction message parameter comprises any one or more of: an origination address and a destination address.

19. A method as claimed in claim 17, wherein the transaction message parameter is mapped to a respective overhead field of the PDU.
20. A method as claimed in claim 10, wherein the step of mapping comprises a step of mapping an encoded message payload into a payload of the PDU.
21. A method as claimed in claim 20, wherein the encoded message payload is mapped into a payload portion of a MIME part of the PDU.
22. A method as claimed in claim 21, wherein the transaction message comprises two or more encoded payload portions.
23. A method as claimed in claim 22, wherein each encoded payload portion is mapped to a respective individual MIME payload.
24. A method as claimed in claim 22, wherein the encoded payload portions are mapped to a common MIME payload.
25. A system adapted for enabling distributed transaction oriented telephony functionality for telephony services in a broadband packet network, the system comprising:
  - a) a first network element adapted to encapsulate a functional content of a transaction message in a Protocol Data Unit (PDU) of the broadband packet network; and

b) a second network element adapted to invoke the functionality using the encapsulated transaction message functional content.

26. A system as claimed in claim 25, wherein the distributed transaction oriented telephony functionality comprises intelligent network/advanced intelligent network (IN/AIN) functionality.
27. A system as claimed in claim 25, wherein the broadband packet network comprises any one or more of: an Asynchronous Transfer Mode (ATM) network; an internet Protocol (IP) network; a Frame Relay (FR) network; and an Integrated Services Digital Network (ISDN).
28. A system as claimed in claim 25, wherein the broadband packet network comprises an IP Network, and the PDU comprises a Session Initiation Protocol (SIP) message envelope.
29. A system as claimed in claim 25, wherein the first network element comprises a media gateway controller adapted to enable telephony signal traffic through the broadband packet network.
30. A system as claimed in claim 25, wherein the second network element comprises an application server adapted to invoke the functionality using transaction message functional content.
31. A system as claimed in claim 30, wherein the application server comprises either one of:

- a) a CCS network element adapted to send and receive PDU's of the broadband packet network; and
  - b) a network element of the broadband packet network.
32. A system as claimed in claim 25, wherein the first network element comprises:
- a) means for formulating a transaction message; and
  - b) means for inserting the formulated transaction message into a payload portion of the PDU.
33. A method as claimed in claim 32, wherein the transaction message comprises either one of a Transaction Capabilities Application Part (TCAP) message and an Intelligent Network Application Part (INAP) message.
34. A system as claimed in claim 25, wherein the first network element comprises means for mapping the transaction message onto the PDU.
35. A system as claimed in claim 34, wherein the transaction message comprises a Transaction Capabilities Application Part (TCAP) message.
36. A system as claimed in claim 35, wherein the means for mapping comprises means for mapping the TCAP message type onto a respective message type of the PDU.
37. A system as claimed in claim 36, wherein the TCAP message type comprises any one or more of: query; response; conversation; unidirectional and abort.

38. A system as claimed in claim 34, wherein the transaction message comprises an Intelligent Network-Application Part (INAP) message.
39. A system as claimed in claim 38, wherein the means for mapping comprises means for mapping an INAP message type onto a respective message type of the PDU.
40. A system as claimed in claim 39, wherein the INAP message type comprises any one or more of: begin; end; continue; unidirectional and abort.
41. A system as claimed in claim 34, wherein the means for mapping comprises means for mapping a transaction message parameter onto a respective PDU message parameter.
42. A system as claimed in claim 41, wherein the transaction message parameter comprises any one or more of: an origination address and a destination address.
43. A system as claimed in claim 42, wherein the transaction message parameter is mapped to a respective overhead field of the PDU.
44. A system as claimed in claim 34, wherein the means for mapping comprises means for mapping an encoded message payload into a payload of the PDU.
45. A system as claimed in claim 44, wherein the encoded message payload is mapped into a payload portion of a MIME part of the PDU.

46. A system as claimed in claim 45, wherein the transaction message comprises two or more encoded payload portions.
47. A system as claimed in claim 46, wherein each encoded payload portion is mapped to a respective individual MIME payload.
48. A system as claimed in claim 46, wherein the encoded payload portions are mapped to a common MIME payload.
- ~~49.~~ A network node (adapted to) enable distributed transaction oriented telephony functionality for telephony services in a broadband packet network, the node comprising means for encapsulating at least a functional content of a transaction message in a Protocol Data Unit (PDU) of the broadband packet network.
50. A node as claimed in claim 49, wherein the distributed transaction oriented telephony functionality comprises intelligent network/advanced intelligent network (IN/AIN) functionality.
51. A node as claimed in claim 49, wherein the broadband packet network comprises any one or more of: an Asynchronous Transfer Mode (ATM) network; an internet Protocol (IP) network; a Frame Relay (FR) network; and an Integrated Services Digital Network (ISDN).
52. A node as claimed in claim 51, wherein the broadband packet network comprises an IP Network, and the PDU comprises a Session Initiation Protocol (SIP) message envelope.



53. A node as claimed in claim 49, wherein the node comprises either one of:
- a) a media gateway controller adapted to enable telephony signal traffic through the broadband packet network; and
  - b) an application server adapted to invoke IN/AIN functionality using TCAP functional content.
54. A node as claimed in claim 53, wherein the application server comprises either one of:
- a) a CCS network element adapted to send and receive PDU's of the broadband packet network; and
  - b) a network element of the broadband packet network.
55. A node as claimed in claim 49, further comprising:
- a) means for formulating a transaction message; and
  - b) means for inserting the formulated transaction message into a payload portion of the PDU.
56. A node as claimed in claim 55, wherein the transaction message comprises either one of a Transaction Capabilities Application Part (TCAP) message and an Intelligent Network Application Part (INAP) message.
57. A node as claimed in claim 49, further comprising means for mapping the transaction message onto the PDU.

58. A node as claimed in claim 57, wherein the transaction message comprises a Transaction Capability Application Part (TCAP) message.
- o 59. A node as claimed in claim 58, wherein the means for mapping comprises means for mapping a TCAP message type onto a respective message type of the PDU.
- o 60. A node as claimed in claim 59, wherein the TCAP message type comprises any one or more of: query; response; conversation; unidirectional; and abort.
- ✓ 61. A node as claimed in claim 57, wherein the transaction message is an Intelligent Network Application Part (INAP) message.
- o 62. A node as claimed in claim 61, wherein the means for mapping comprises means for mapping the INAP message type onto a respective message type of the PDU.
- o 63. A node as claimed in claim 62, wherein the INAP message type comprises any one or more of: begin; end; continue; unidirectional; and abort.
- o 64. A node as claimed in claim 57, wherein the means for mapping comprises means for mapping a transaction message parameter onto a respective PDU message parameter.
- o 65. A node as claimed in claim 64, wherein the transaction message parameter comprises any one or more of: an origination address and a destination address.

- 0 66. A node as claimed in claim 64, wherein the transaction message parameter is mapped to a respective overhead field of the PDU.
- ✓ 67. A node as claimed in claim 57, wherein the means for mapping comprises means for mapping an encoded message payload into a payload of the PDU.
- 0 68. A node as claimed in claim 67, wherein the encoded message payload is mapped into a payload portion of a MIME part of the PDU.
- 0 69. A node as claimed in claim 68, wherein the transaction message comprises two or more encoded payload portions.
- ✓ 70. A node as claimed in claim 69, wherein each encoded payload portion is mapped to a respective individual MIME payload.
- ✓ 71. A node as claimed in claim 69, wherein the encoded payload portions are mapped to a common MIME payload.